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ABSTRACT

This bibliography is a first edition designed to aid the work of the Textual Communication Research Unit and will be followed by a further edition in two years' time. Sources relevant to textual communication, except those pertaining exclusively to broadcasting or children's texts, are arranged as either pertaining to language or to visual design. A few useful references not directly relevant to the design of texts are included at the beginning as a matter of record. The language area is divided into philosophy, linguistics, instructional psychology, programed learning, readability, analysis of texts, reading and writing style. The visual design area is divided into general, graphs-charts-tables, scientific and technical diagrams, algorithms, maps, typography, scripts and symbols. (WH)

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The Open University
Institute of Educational Technology

MONOGRAPH No. 3

Bibliography for Textual Communication

by

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BIBLIOGRAPHY FOR TEXTUAL COMMUNICATION

Publications relevant to research on the design of texts for the adult learner.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
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Senior Lecturer

and

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Institute of Educational Technology
Monograph No.3
January 1974

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Preface

This bibliography is the first production of the Textual Communication Research Unit (TCRU). The work has taken twelve months, and the products include a filing system containing reprints and research reports as well as the present bibliography. I am grateful to the Board of the Institute for providing funds from its research budget (incidentally, the total cost of this work came to under £1000), and to the Director, Professor David Hawkridge, for his support and encouragement.

My chief debt is to Mrs. Eleanor Smith, an information scientist who was appointed part-time consultant for the duration of the project. Her initiative and hard work has made a major contribution to the bibliography, and I am truly grateful to her.

The comments that precede each section are, of course, mine. They help to explain why the bibliography is structured the way it is, and act as a runningcommentary on the current status of textual research as it appears to me. Also, the responsibility for the structure of the bibliography (and any mistakes that may exist) is mine.

This is the first edition. I hope to benefit from the advice of experts in the major fields covered by the bibliography; and expect to produce a further edition in two years' time. Therefore, any comments on the structure or content of the bibliography are welcome and may be addressed to me at the Institute.

M. Macdonald-Ross
Institute of Educational Technology
December 1973

Introduction

A bibliography is produced for a purpose, and its whole structure is dictated by that purpose. The primary function of this bibliography is to support the work of the Textual Communication Research Unit (TCRU) which I direct as part of the Institute's research programme. The aim of the TCRU is to conduct research into Open University printed materials (correspondence texts, set books, etc.) and to advise on the construction of these materials.

Although the bibliography is thus adapted to meet the needs of the Open University, it will no doubt have its uses elsewhere. We are not the only people who face the problems of designing sophisticated messages in printed form. Therefore, a secondary function of the bibliography is to make links with the invisible college of researchers whose interests are in some way similar to ours.

It is as well to be clear about what the bibliography has not attempted to do. We have not listed research into the design of texts for young children (unless it has relevance for adults). We have not listed research into broadcasting (unless it has relevance for texts). We have not tried to list every single reference where there already exist perfectly good review sources. Above all, remember that a bibliography lists things that exist; not things that don't exist (but ought to). Some areas of great concern are virtually unrepresented in the literature: they may form the basis of future work, but cannot be catered for here.

The reader will notice the striking variations in the quality and quantity of research in different sections of this bibliography. These variations are real, and cause great trouble for the TCRU, since the practical problems which face us are no respecters of discipline boundaries and state-of-the-art limitations.

The format of the bibliography deserves a few notes of explanation. Most journal style codes make use of italic: usually titles of books and names of journals are in italic. This has led some authors to use underscoring instead of italic when a bibliography is produced from typescript. The resultant mish-mash of horizontal black lines distracts the eye and make the bibliography inelegant and almost certainly less readable. In this bibliography we have adopted a "clean" style stripped bare to the essentials. Thus, instead of:

Klare, G.R. The Measurement of Readability. Ames (Ia.) Iowa State University Press (1963)

Pressey, L.C. "The Determination of the Technical Vocabularies of the School Subjects." School and Society (1924) 20, pp. 91-96

We type thus:

KLARE, G.R. (1963) The measurement of readability. Iowa State U. Press

PRESSEY, L.C. (1924) The determination of the technical vocabularies of the school subjects. School and Society 20: 91-6

Note the removal of all distracting features: underscoring, quotation marks and unnecessary capital letters. The author and date are stressed because they are often used by the reader in deciding whether to read further. The date should usually be the date of first publication (it is a trifle strange to read references like "Darwin, C (1971)" !). Place of publication is left out whenever possible, and in our case that means whenever the place is London or the publisher is a University Press. If a book is simultaneously published in two countries in hardback and paperback we list just one publisher - usually the British hardback, or if this is out of print, the British paperback. This brevity should not cause hardship, for standard reference sources will reveal the full publishing history of any book in or out of print.

The classification system is the simplest we could devise for our purposes (we are "lumpers" rather than "splitters"). At the start of the bibliography are general references of indirect relevance to the design of texts. Here we list a few key works, and make no attempt to be comprehensive. Later, the bibliography lists references of direct practical significance. Here we have tried to be comprehensive by listing all relevant items, or by listing key review papers (for example, the list of references on ordinary language algorithms - 6.4 - is as complete as we could make it).

A. GENERAL

The first part of the bibliography contains references which are not of direct relevance ot the design of texts. They were reached after back-tracking from more practical concerns, and are placed in the bibliography as a matter of record.

A.1 Communication

This short section contains a number of works on communication which go beyond the province of language, and so do not fit comfortably in part B.

BECKENBACH, E.F. and TOMPKINS, C.B. (1971) Concepts of communication. New York, Wiley

BROOKES, B.C. (1970) The limits of human communication. Institute of Scientific & Technical Communicators (PTI: DG 35; see section B.8.2.1.)

BRYSON, L., ed. (1948) The communication of ideas. New York, Cooper Square

CHERRY, C. (1966) On human communication. 2nd ed. MIT Press

DE VITO, J. (1971) Communication: concepts and processes. New Jersey, Prentice-Hall

KINNEAVY, J.L. (1972) Theory of discourse. New Jersey, Prentice-Hall

LAO TZU (1962) The way of life according to Lau Tzu, ed. by W. Bynner. New York, Capricorn

MacKAY, D.M. (1969) Information, mechanism and meaning. MIT Press

McLUHAN, M. (1962) The Gutenberg galaxy: the making of typographic man. Routledge

McLUHAN, M. (1964) Understanding media, the extension of man. Routledge

McLUHAN, M., and FIORE, Q. (1967) The medium is the massage, an inventory of effects. Penguin

MEREDITH, P. Instruments of communication: an essay on scientific writing. Pergamon

MILLER, G.A. (1967) The psychology of communication. Penguin

PIAGET, J. (1959) The language and thought of the child. 3rd ed. Routledge

RUESCH, J., and BATESON, G. (1951) Communication: the social matrix of psychiatry. New York, Norton

SHANNON, C.E. (1949) The mathematical theory of communication. U.of Illinois Press

WATZLAWICK, P., ed. (1969) Pragmatics of human communiction. Faber

A.2 Thinking

This section owes its genesis to my discontent at the present status of content analysis (see section B.6.3 below). Briefly, the argument runs thus: our experimental work (for instance, learner strategies x structure of text) presupposes adequate ways of describing the meaning structure of a text. We need content analysis methods which describe not just the cognitive content, but the style and structure of the writer's arguments. No such methods exist. Therefore, we are driven back either a. to construct improved procedures for content analysis, or b. to make better use of non-quantitative textual criticism. Both these avenues are explored in this bibliography. The present section asks "what is known about human thinking and reasoning?" If some consensual framework existed, it could form the basis of the analysis procedures we seek. Judging from the works listed below, no such consensus yet exists; the variety of conceptual schemes erected in this field is quite striking.

ABERCROMBIE, M.L.J. (1960) The anatomy of judgement, an investigation into the processes of perception and reasoning. Hutchinson

ADAMS, P., ed. (1972) Language and thinking. Penguin

BARTLETT, Sir F. (1958) Thinking: an experimental and social study. Allen & Unwin

BOERWINKEL, F. (1971) Inclusive thinking. Lutterworth

BOLTON, N. (1972) The psychology of thinking. Methuen

BRUNER, J.S., GOODNOW, J., and AUSTIN, G.A. (1956) A study of thinking. New York, Wiley

CRAWFORD, R.P. (1964) Direct creativity with attribute listing. Wells, Vermont, Fraser Pub.Co.

DE BONO, E. (1969) The five day course in thinking. Penguin

DIESING, P. (1972) Patterns of discovery in the social sciences. Routledge

FISCHER, D.H. (1971) Historian's fallacies: toward a logic of historical thought. Routledge

GORDON, W.J.J. (1961) Synectics : the development of creative capacity. New York, Harper & Row

HARRIS, R.T., and JARRETT, J.L. (1956) Language and informal logic. Longman

JOHNSON, D.M. (1972) Systematic introduction to the psychology of thinking. New York, Harper & Row

A.2 Thinking - continued

JONES, O.R., ed. (1971) The private language of argument. Macmillan

KOESTLER, A. (1970) The act of creation. Pan Books

LEONARD, H.S. (1967) Principles of reasoning: an introduction to logic, methodology and the theory of signs. New York, Dover

McDONALD, D. (1971) The language of argument. Scranton, Chandler

NEISSER, U. (1967) Cognitive psychology. New York, Appleton

NEWELL, A.N. and SIMON, H.A. (1972) Human problem solving. Englewood Clifts, N.J. Prentice-Hall

MINSKY, M. and PAPERT, S. (1971) Artificial intelligence. A.I. Laboratory, MIT

POLYA, G. (1957) How to solve it, a new aspect of mathematical method. 2nd ed. New York, Doubleday

PRINCE, G.M. (1970) The practice of creativity: a manual for dynamic group problem solving. New York, Collier

RICHARDS, I.A. (1938 reissued 1973) Interpretation in teaching. Routledge

ROKEACH, M. (1960) The open and closed mind. Basic Books

STEBBING, L.S. (1939) Thinking to some purpose. Penguin

THOULESS, R.H. (1953) Straight and crooked thinking. Rev.ed. Pan Books

TOULMIN, S.E. (1958) The uses of argument. Cambridge U.Press

WASON, P.C., and JOHNSON-LAIRD, P.N. (1968) Thinking and reasoning. Penguin

WASON, P.C. and JOHNSON-LAIRD, P.N. (1972) Psychology of reasoning: structure and content. Batsford

WERTHEIMER, M. (1959) Productive thinking. 2nd.ed. New York Harper & Row

A.3 Information science

Apart from its intrinsic interest, recent work in information science touches our research needs in three ways. First, it shows what may be obtained by a macro-level type of content analysis. Second, it offers some quite interesting insights into those systems of technical terminology which are so integral a part of science, technology and mathematics. Third, it faces the task of representing the structure of knowledge in an unambiguously straightforward manner. The references chosen centre around the problems of building, representing and using classification schemes based on technical terms.

A.3.1 Indexing

ARTANDI, S. (1963) Roles and links, or forward to Cutter. American Documentation 14:74-7

AUSTIN, D. (1969) Prospects for a new general classification. J. Librarianship 1:149-69

AUSTIN, D. (1969) PRECIS, a rotated subject index system. British National Bibliography.

BERNIER, C.L. (1956) Correlative indexes I: Alphabetical correlative indexes. American Documentation 7:283-8

BERNIER, C.L. (1957) Correlative indexes II: Correlative indexes. American Documentation 8:47-50

BERNIER, C.L. (1957) Correlative indexes III: Semantic relations among semantemes - the technical thesaurus. American Documentation 8:211-20

BERNIER, C.L. (1962) Correlative indexes VIII: Subject-indexing vs word-indexing. J. Chemical Documentation 2:117-22

BERNIER, C.L. (1964) Correlative indexing IX: Vocabulary control. J.Chemical Documentation 4:99-103

CLEVERDON, C.W. (1960-62) ASLIB Cranfield Research Project: Indexing systems. ASLIB

COSTELLO, J.C. (1961) Some solutions to operational problems in concept co-ordination. American Documentation 12:191-7

COSTELLO, J.C. (1961) Uniterm indexing principles: problems and solutions. American Documentation 12:20-26

COSTELLO, J.C. (1964) A basic theory of roles as syntactical control devices in coordinate indexes. J. Chemical Documentation 4:116-24

DOYLE, L.B. (1959) Programmed interpretation of text as a basis for information retrieval systems. Proceedings of the Western Joint Computer Conference

DOYLE, L.B. (1961) Semantic road maps for literature searchers. J. Association for Computing Machinery 8:553-78

DOYLE, L.B. (1962) Indexing and abstracting by association. American Documentation 13:278-90

JOHNSON, A. (1959) Experience in the use of unit concept coordinate indexing applied to technical reports. J. Documentation 15:146-55

SPARCK-JONES, K. (1970) The use of automatically obtained keyword classifications for information retrieval. Information Storage and Retrieval 5:175-201

A.3.2. Thesaurus compilation

AITCHISON, J. (1972) Thesaurus construction, a practical manual. ASLIB

AITCHISON, J. and GILCHRIST, A. (1972) Thesaurus construction. ASLIB

BLAGDEN, J.F. (1968) Thesaurus compilation methods. ASLIB Proceedings 20:345-59

COLBACH, R. (1970) Thesaurus structure and generic posting in Handling of nuclear information: pp585-95 International Atomic Energy Agency

ENGINEERS Joint Council (1967) Thesaurus of engineering and scientific terms. New York

GILCHRIST, A. (1971) The thesaurus in retrieval. ASLIB

GREER, F.L. (1965) User vocabulary in thesaurus development. Perceptual and Motor Skills 21: 827-37

NEVILLE, H.H. (1970) Feasability study of a scheme for reconciling thesauri covering a common subject. J. Documentation 25:313-36

PAPIER, L.S. and CORTELYON, E.H. (1962) Use of a technical word association test in the preparation of a thesaurus. J. Documentation 18:183-7

A.3.3 Information retrieval

ALLEN, T.J. (1968) Organizational aspects of information flow in technology. ASLIB Proceedings 20:433-54

CARLSON, G. (1964) Search strategy by reference librarians. Sherman Oaks, California, Hughes Dynamics Inc. (PB166 192)

CONANT, R.C. (1968) Information transfer in complex systems with applications to regulation. U.of Illinois, Electrical Engineering Research Laboratory, Technical report no.12

FARRADANE, J.E.L. (1952) A scientific theory of classification and indexing. J. Documentation 8:73-92

FARRADANE, J.E.L. (1955) The psychology of classification. J. Documentation 11:187-201

FARRADANE, J.E.L. (1965) Problems in analysis and terminology for information retrieval. J. Documentation 21:287-90

FARRADANE, J.E.L. (1967) Concept organisation in information retrieval. Information Storage and Retrieval. 3:297-314

FARRADANE, J.E.L. (1970) Analysis and organisation of knowledge for retrieval. ASLIB Proceedings 22:607-616

FOSKETT, A.C. (1969) The subject approach to information. Bingley

JOLLEY, J.L. (1968) Data study. Weidenfeld & Nicolson

McGARRY, K.J. (1972) Semantics in the organisation of knowledge: a programmed text for students of information retrieval. Bingley

MOERS, C.N. (1960) The next twenty years in information retrieval. American Documentation 11:229-236

NEEDHAM, R.M. and SPARCK-JONES, K. (1964) Keywords and clumps: recent work on information retrieval at the Cambridge Language Research Unit. J. Documentation 20:5-15

RICHMOND, P.A. (1960) Hierarchical definition. American Documentation 11:91-6

ROLLING, L. (1964) Role of graphic display of concept relationships. International Study Conference on Classification Research, 2nd. Elsinore, Denmark

SARACEVIC, T., ed. (1970) Introduction to information science. New York, Bowker

VICKERY, B.C. (1973) Information systems. Butterworth

B. LANGUAGE

One of the denoting marks of the twentieth century is a self-conscious interest in the uniquely human tool of language. The century opened with the realisation by philosophers that language was not the transparent, trouble-free medium they had so long taken it for; and by the close we shall surely have natural language communication with machines. The size and scope of this part of the bibliography is directly related to this progress in human understanding, for language plays the primary role in most kind of textual communication.

B.1 Philosophy

This section lists major works in the philosophy of language. It serves as a cultural background to the research which follows in later sections.

AUSTIN, J.L. (1962) How to do things with words. Oxford U. Press

AYER, A.J. (1936) Language, truth and logic. Gollancz

BLACK, M. (1971) Margins of precision: essays in logic and language. New York, Cornell U. Press

BLACK, M. (1968) The labyrinth of language. Praeger

BORSODI, R. (1967) The definition of definition: a new linguistic approach to the integration of knowledge. Boston, Porter Sargent

CARNAP, R. (1956) Meaning and necessity: a study of semantics and modal logic. 2nd ed. Chicago, U. of Chicago Press

GELLNER, E. (1959) Words and things. Gollancz

GOODMAN N. (1969) Languages of art: an approach to a theory of symbols. Oxford U. Press

KOLAKOWSKI, L. (1972) Positivist philosophy from Hume to the Vienna circle. Penguin

MAGEE, B. (1971) Modern British philosophy: Dialogues. Secker & Warburg

MORRIS, C. (1938) Foundations of the theory of signs. U.of Chicago Press

MORRIS, C. (1946) Signs, language and behaviour. Braziller

OGDEN, C.K. and RICHARDS, I.A. (1923) The meaning of meaning. Routledge

QUINE, W. van O. (1960) Word and Object. MIT Press

QUINE, W. van O. (1963) From a logical point of view. 2nd ed. New York, Harper & Row

RESCHER, N. (1966) The logic of commands. Routledge

ROBINSON, R. (1950) Definition. Oxford U. Press

SAUNDERS, J.T. and HENZE, D.F. (1967) The private-language problem: a philosophical dialogue. New York, Random House

SEARLE, J.R. (1970) Speech acts: an essay in the philosophy of language. Cambridge U. Press

TARSKI, A. (1965) Introduction to logic and to the methodology of deductive sciences. Oxford U. Press

TAYLOR, D.M. (1970) Explanation and meaning. Cambridge U. Press

WAISMANN, F. (1968) The principles of linguistic philosophy. Macmillan

WITTGENSTEIN, L. (1922) Tractatus logico-philosophicus. Routledge

WITTGENSTEIN, L. (1953) Philosophical investigations. Oxford, Blackwell

WOODGER, J.H. (1952) Biology and language. Cambridge U. Press

B.2 Linguistics

In this section we get closer to practical concerns. Most papers on readability and instructional psychology have some direct or indirect dependence on linguistics. We have included semantics and general semantics under this section; they could have been placed separately, but we preferred to use the term linguistics with a broad connotation.

B.2.1 General

BARBER, C.L. (1972) The story of language. 5th ed. Pan Books

BAR-HILLEL, Y. (1964) Language and communication. Reading (Mass.) Addison Wesley

BLOOMFIELD, L. (1933) Language. New York, Holt, Rinehart & Winston

BODMER, F. (1944) The loom of language. New York, Norton

BROWN, R. (1958) Words and things. New York, Free Press

BROWN, R. ed. (1970) Psycholinguistics: selected papers. New York, Free Press

CARROLL, J.B. and FREEDLE, R.O., eds. (1972) Language comprehension and the acquisition of knowledge. Washington, Winston

CHAO, Y.R. (1968) Language and symbolic systems. Cambridge U. Press

CHOMSKY, N. (1957) Syntactic structures. The Hague, Mouton

CHOMSKY, N. (1968) Language and mind. New York, Harcourt

CHOMSKY, N. (1972) Problems of knowledge and freedom. Fontana/Collins

CLARK, H.H. and CLARK, E.V. (1968) Semantic distinctions and memory for complex sentences. Qu.J Experimental Psychology 20:129-38

CRYSTAL, D. (1971) Linguistics. Penguin

EPSTEIN, W. (1961) The influence of syntactical structure on learning. American J. Psychology 74:80-5

FLORES D'ARCAIS, G.B. and LEVELT, W.J.M., eds. (1970) Advances in psycholinguistics. Amsterdam, North-Holland Pub.Co.

FOSTER, B. (1970) The changing English language. Penguin

HARRIS, Z.S. (1962) String analysis of sentence structure. The Hague, Mouton

HAYAKAWA, S.I. (1965) Language in thought and action. 2nd ed. Allen & Unwin

HEATH, S., MacCABE, C. and PRENDERGAST, C., eds. (1972) Signs of the times, introductory readings in textual semiotics. Granta

HERZEBERGER, H.G. (1961) The joints of English. Symp. App.Maths 12:99-103

HOGBEN, L. (1943) Interglossa: a draft of an auxiliary for a democratic world order, being an attempt to apply semantic principles to language design. Penguin

HUDDLESTON, R.D. (1971) The sentence in written English: a syntactic study based on an analysis of scientific texts. Cambridge U. Press

JAKOBSON, R. and HALLE, M. (1956) Fundamentals of language. The Hague, Mouton

JESPERSON, O. (1933) Essentials of English grammar. Allen & Unwin

JOHNSON, R.E. (1970) Recall of prose as a function of the structual importance of the linguistic units. J. Verbal Learning and Verbal Behaviour 9:12-20

JOHNSON, W. (1946) People in quandaries: the semantics of personal adjustment. New York, Harper & Row

KATZ, J.J. (1972) Semantic theory. New ed. New York, Harper & Row

KORZYBSKI, A. (1958) Science and sanity: an introduction to non-Aristotelian systems and general semantics. 4th ed. New York, Science Press

LEECH, G.N. (1971) Meaning and the English verb. Longman

LYONS, J., ed. (1970) New horizons in linguistics. Penguin

MACKEY, W.F. (1965) Language teaching analysis. Longman

MARKEL, N.N. (1969) Psycholinguistics: an introduction to the study of speech and personality. Dorsey

MARKS, M.R. (1952) Verbal context and memory span for meaningful material. American J. Psychology 65:298-300

MILLER, G.A. (1951) Language and communication. New York, McGraw-Hill

MILLER, G.A. (1962) Some psychological studies of grammar. Amsterdam Psychologist 17:748-62

MILLER, G.A. and SELFRIDGE, J.A. (1950) Verbal context and the recall of meaningful material. American J. Psychology 63:176-85

OSGOOD, C.E., SUCI, G.J. and TANNENBAUM, P.H. (1967) The measurement of meaning. U. of Illinois Press

POSTMAN, N. and WEINGARTNER, C. (1966) Linguistics: a revolution in teaching. New York, Dell Pub.Co.

SAPIR, E. (1949) Culture, language and personality. U.of California Press

SAUSSURE, F. de (1966) Course in general linguistics. New York, McGraw-Hill

SCHAFF, A. (1962) Introduction to semantics. Pergamon Press

SCHLESINGER, I.M. (1968) Sentence structure and the reading process. The Hague, Mouton

SHEPARD, R.N. (1967) Recognition memory for words, sentences and pictures. J. Verbal Learning and Verbal Behaviour 6:156-63

SKINNER, B.F. (1957) Verbal behaviour. New York, Appleton

SMITH, F. and MILLER, G.A. (1968) The genesis of language, a psycholinguistic approach. MIT Press

STEINBERG, D.D. and JAKOBVITS, L.A. (1971) Semantics, an interdisciplinary reader in philosophy, linguistics and psychology. Cambridge U.Press

STRANG, B.M.H. (1968) Modern English structure. 2nd ed. Arnold

TERWILLIGER, R.F. (1969) Meaning and mind: a study in the psychology of language. Oxford U.Press

ULLMANN, S. (1951) The principles of semantics. Oxford, Blackwell

ULLMANN, S. (1962) Semantics: an introduction to the science of meaning. Oxford, Blackwell

VYGOTSKY, L.S. (1962) Thought and language. MIT Press

WHORF, B.L. (1956) Language, thought and reality. MIT Press

WILKS, Y.A. (1972) Grammar, meaning and the machine analysis of language. Routledge

WINOGRAD, T. (1972) Understanding natural language. Edinburgh U.Press

YNGVE, V.H. (1960) A model and an hypothesis for language structure. Proceedings of the American Philosophical Society 104: 444-66

ZIERER, E. (1970) The theory of graphs in linguistics. The Hague, Mouton

ZIPF, G.K. (1935) The psycho-biology of language. Boston, Houghton Mifflin

B.2.2 Sociology

BERNSTEIN, B. (1971) Class codes and control. Vol.I: Theoretical studies towards a sociology of language. Routledge

CARSWELL, E.A. and ROMMETVEIT, R., eds. (1971) Social contexts of messages. Academic Press

CREBER, J.W.P. (1972) Lost for words: language and educational failure. Penguin

LAWTON, D. (1968) Social class, language and education. Routledge

OPIE, I. and OPIE, P. (1959) The lore and language of school children. Oxford U.Press

B.3 Instructional psychology

This section represents the efforts of experimental psychologists to tackle some of the problems of meaningful learning from texts. Virtually all the references are post - 1965, which is a sign that the chains of certain theoretical prisons are at last being cast off.

B.3.1 General

ALLEN, I. (1970) Some effects of advance organisers and level of question on the learning and retention of written social studies material. J. Ed. Psychology 61:333-9

ALLEN, J.E. and TRAVERS, R.M.W. (1967) Retention as a function of rate of information transmission and degree of compression. Florida J. Ed. Res. 9:3-9

ANDERSON, R.C. (1970) Control of student mediating processes during verbal learning and instruction. Rev. Ed. Res 40:349-69

ANDERSON, R.C. and AUSUBEL, D.P. (1965) Readings in the psychology of cognition. New York, Holt, Rinehart & Winston

AUSUBEL, D.P. (1963) The psychology of meaningful verbal learning. New York, Grune & Stratton

AUSUBEL, D.P. (1969) Proactive effects in meaningful verbal learning and retention. J. Ed. Psychology 60:59-64

CARROLL, J.B. (1968) On learning from being told. Ed. Psychology 5:5-11

CASHEN, V.M. (1970) Role of the isolation effect in a formal educational setting. J. Ed. Psychology 61:484-86

CHAPANIS, A. (1965) Words, words, words. Human Factors 7:1-17

COLEMAN, E.B. (1968) A measure of information gained during prose learning. Reading Res.Qu. 3:369-86

CONRAD, R. (1962) The design of information. J. Occup. Psychology 36(3)159-62

CONRAD, R. (1967) Mass technological systems. Listener 78 No.1998 (July 13):39-40

CROUSE, J.H. (1970) Transfer and retroaction in prose learning. J. Ed.Psychology 61:226-8

FRASE, L.T. (1967) Learning from prose materials. J. Ed. Psychology 58:266-72

FRASE, L.T. (1969) Paragraph organisation of written materials. J. Ed. Psychology 60:394-401

FRASE, L.T. (1969) Structural analysis of the knowledge that results from thinking about text. J. Ed. Psychology Monograph 60:6 pt 2

FRASE, L.T. (1969) Tabular and diagrammatic presentation of verbal materials. Perceptual & Motor Skills 29:320-22

FRASE, L.T. (1970) Influence of sentence order and amount of higher level text processing upon reproductive and productive memory. Am.Ed.Res.J. 7:307-19

FRASE, L.T. (1971) A heuristic model for research on prose learning. New York, American Educational Research Association

FRASE, L.T. and SILBIGER, F. (1970) Some adaptive consequences of searching for information in a text. Am.Ed.Res.J. 7:553-60

GAGNÉ, R.M. Context, isolation and interference effects on the retention of fact. J.Ed. Psychology 60:408-14

GEISERT, P. (1970) A comparison of the effects of information mapped learning materials and traditional materials on the learning of concepts via the printed page and computer cathode ray tube. Florida State University

GLASER, R. and RESNICK, L.H. (1972) Instructional psychology. Annual Review of Psychology 23:207-76

GROTELUESCHEN, A. (1968) Effects of differentially structured introductory materials and learning tasks on learning and transfer. Am.Ed.Res.J. 5:191-202

HERSHBERGER, W.A. (1964) Self-evaluation reading and typographical cueing: techniques for programming self-instructional reading materials. J.Ed.Psychology 55:288-296

HERSHBERGER, W.A. (1965) Typographical cueing in conventional and programmed texts. J.Applied Psychology 49(1)55-60

HOVLAND, C.I. (1957) The order of presentation in persuasion. Yale U. Press

HOVLAND, C.I. (1963) Communication and persuasion: psychological studies of opinion change. Yale U. Press

JAMES, D.W. JOHNSON, M.L. and VENNING, P. (1956) Testing for learnt skill in observation and evaluation of evidence. Lancet 271:379-83

JENSEN, L. (1970) Retroactive inhibition of difficult and unfamiliar prose. J.Ed.Psychology 61:305-9

JESTER, R.E. and TRAVERS, R.M.W. (1966) Comprehension of connected meaningful discourse as a function of rate and mode of presentation. J.Ed.Res. 59:297-302

JONES, S. (1966) Decoding a deceptive instruction. Brit.J.Psychology 57:405-411

JONES, S. (1968) Instructions, self-instructions and performance. QU.J.Exp.Psychology 20(1):74-78

KLARE, G.R., MABRY, J.E. and GUSTAFSON, L.M. (1954) The relationship of verbal communication variables to immediate and delayed retention and to acceptability of technical training materials. Research Bulletin, AFPTRC_TR_54-103 San Antonio, USAF Personnel and Training Center, Lackland Air Force Base.

KLARE, G.R., MABRY, J.E. and GUSTAFSON, L.M. (1955) The relationship of patterning (underlining) to immediate retention and to acceptability of technical material. J.Applied Psychology 49:40-42

KLARE, G.R., SHUFORD, E.H. and NICHOLS, W.H. (1958) The relationship of format organisation to learning. Ed. Res.Bull 37:39-45

KOEN, F. (1969) The psychological reality of the paragraph. J.Verbal Learning and Verbal Behaviour 8:49-53

MACCOBY, N. (1969) Communication and learning. Paper presented at the International Communication Association Symposium at Western Speech Association meeting, San Diego, California November 25 1969

McLAUGHLIN, G.H. (1967) Psycho-logic, a possible alternative to Piaget's formulation. Brit.J.Ed.Psychology 33:61-67

MURRAY, F.B. (1970) Research briefs: note on the utility of advanced organisers. J.Ed.Res. 64:141

RABBITT, P.M.A. (1964) Ignoring irrelevant information. Brit.J.Psychology 55:403-14

ROTHKOPF, E.Z. (1965) Some theoretical and experimental approaches to problems in written materials. in Learning and the educational process, ed. J.D.Krumboltz. Chicago, Rand McNally

ROTHKOPF, E.Z. (1968) Textual constraint as function of repeated inspection. J.Ed.Psychology 59:20-25

ROTHKOPF, E.Z. and JOHNSON, P.E., eds. (1971) Verbal learning research and the technology of written instruction. New York, Teachers College Press, Columbia University

SERRA, M.C. (1953) The concept burden of instructional materials. Elem.Sch.J. 53:508-12

SHEPARD, R.N. (1967) Recognition memory for words, sentences and pictures. J.Verbal Learning and Verbal Behaviour 6:156-63

SMITH, K.U. and SMITH, M.F. (1966) Cybernetic principles of learning and educational design. New York, Holt, Rinehart and Winston

WASON, P.C. (1957) The effect of compressing information on its retention. Institute of Scientific and Technical Communicators (PTI: DG 10; see section B.8.2.1.)

WASON, P.C. (1962) Psychological aspects of negation. Communications Research Centre, University College London

WASON, P.C. (1965) The contexts of plausible denial. J. Verbal Learning and Verbal Behaviour

WONG, M.R. (1970) Retroactive inhibition in meaningful verbal learning. J.Ed.Psychology 61:410-15

B.3.2. Instructional psychology: Questions

BOYD, W.M. (1973) Repeating questions in prose learning. J.Ed.Psychology 64:31-38

BULL, S. (1973) The role of questions in maintaining attention to textual materials. Rev.Ed.Res. 43(1)83-7

FRASE, L.T. (1968) Effect of question location, pacing and mode upon retention of prose material J.Ed.Psychology 59(4)244-49

FRASE, L.T. (1968) Some data concerning the mathemagenic hypothesis. Am. Ed.Res.J. 5:181-9

FRASE, L.T. (1968) Some unpredicted effects of different questions upon learning from connected discourse. J.Ed.Psychology 59:197-201

FRASE, L.T. (1970) Boundary conditions for mathemagenic behaviour. Rev.Ed.Res. 46(3)337-48

HARRAH, D. (1963) Communication: a logical model. MIT Press

LADAS, H. (1973) The mathemagenic effects of factual review questions on the learning of incidental information. Rev.Ed.Res. 43(1) 71-82

MORASKY, R.L. (1972) Eye movement as a function of adjunct question placement. Am.Ed.Res.J. 9:251-61

MORASKY, R.L. and WILCOX, H.H. (1970) Time required to process information as a function of question placement. Am.Ed.Res.J. 7:561-7

NATKIN, G. (1969) The effects of adjunct questions on short and long-term recall of prose materials. Am.Ed. Res.J. 6:425-32

PAYNE, S.L. (1951) The art of asking questions. New Jersey, Princeton U. Press

PEECK, J. (1970) Effect of pre-questions on delayed retention of prose material. J.Ed.Psychology 61:241-6

ROTHKOPF, E.Z. (1966) Learning from written materials, an exploration of the control of inspection behaviour by test-like events. Am.Ed.Res.J. 3:241-9

ROTHKOPF, E.Z. (1967) Selective facilitative effects of interspersed questions on learning from written material. J.Ed.Psychology 58:56-61

ROTHKOPF, E.Z. (1970) The concept of mathemagenic activities. Rev.Ed.Res. 40:325-36

ROTHKOPF, E.Z. (1970) Effects of interpersonal interaction on the instructional value of adjunct questions in learning from written materials. J.Ed.Psychology 61:417-27

ROTHKOPF, E.Z. (1972) Variable adjunct question schedules. Bell Telephone Labs. Inc. J.Ed.Psychology 63:87-92

SANDERS, N.M. (1966) Classroom questions: what kinds? New York, Harper & Row

WEINTRAUB, S. (1969) The question as an aid in reading. Reading Teacher 22:751, 753-5

B.4 Programmed learning

If this bibliography had been constructed ten years ago the literature of programmed learning would have figured prominently. For these programs were instructional texts designed according to theoretical specifications, and subsequently subjected to extensive empirical tests. But we now have to accept that programmed learning is no longer a coherent movement. Isolated groups of workers exist here and there, but very few programs are now written in the old formal styles. The better ideas have been absorbed into instructional psychology and educational technology.

In the early 1960s many psychologists tried their hands at programmed learning, usually to test the claims made by the rival schools of Skinner and Crowder. These studies are not listed here, not only because few such programs are now written, but because (alas!) many of these experiments were rather poorly designed, and the results of doubtful value. But we have listed certain source-books and reviews; from these the whole network of research papers can be retrieved.

The style of the Open University correspondence texts owes a lot to the programmed learning movement; we made a self-conscious attempt to use the concepts we regarded as valid, whilst discarding arbitrary rules about frame construction. The resultant correspondence text is, of course, the prime research object of the TCRU.

B.4 Programmed learning

FRY,E. (1964) A classification of variables involved in a programmed learning situation in Educational Technology ed. de Cecco. Holt, Rinehart & Winston

GILBERT, T.F. (1969) Mathetics: an explicit theory for the design of teaching programmes. Longmac

GLASER, R. ed (1965) Teaching machines and programmed learning II: data and directions. National Educational Association, Department of Audio-Visual Instruction

GROPPER, G.L. (1970) The design of stimulus materials in response orientated programs. AV Comm.Rev. 18:129-59

HARTLEY, J., ed. (1972) Strategies for programmed instruction: an educational technology. Butterworth

HOLLAND, J.G. (1965) Research on programming variables in Teaching machines and programmed learning eds. Lumsdaine and Glaser. National Educational Association, Department of Audio-Visual Instruction.

LANGE, P., ed. (1967) Programmed instruction. NSSE Yearbook 16 pt II. U.of Chicago Press

LUMSDAINE, A.A. and GLASER, R. eds (1960) Teaching Machines and programmed learning. National Educational Association, Department of Audio-Visual Instruction

MACDONALD-ROSS, M. (1969) Programmed learning - a decade of development. Int.J. Man-Machine Studies 1:73-100

ROWNTREE, D. (1966) Basically branching, a handbook for programmers. Macdonald

SCHRAMM, W. (1964) The research on programmed instruction. U.S. Office of Education Bull. No.35

SKINNER, B.F. (1968) The technology of teaching. New York, Appleton Century Croft

B.5 Readability

Readability measures are one of the established methods of research into textual communication. The literature that supports them is extensive. There are two classic surveys of the field: Chall (1958), which is itself readable and a good introduction, and Klare (1963), by far the most complete source. This bibliography assumes that the serious researcher will have Klare's book at hand, and is consequently rather selective: earlier references are only provided where they meet a specific need.

Before he starts on this subject, the reader should note that there are certain familiar views or positions that are apt to occur whenever readability measures are used:

1. First, a few people tend to dismiss the usefulness of these measures entirely, either because they feel that humans are more reliable judges than any formula, or, contrarywise, because readability measures do work, but don't solve all the problems of human communication. The first view (naive common-sense) is just plain wrong: the better formulae are markedly more reliable than human judges at estimating the readability and comprehensibility of prose. The second view is too idealistic: if we waited for perfect solutions we would be paralysed; moreover it is not the intention of readability measures to solve all problems.

2. The position I take is that the job of readability measures is to identify, to point out those places where the act of communication may break down or run into trouble. More sophisticated methods of analysis can then be used to diagnose the cause of the trouble and advise on a cure. For example, the Open University produces three hundred correspondence texts and dozens of set books and readers every year: we cannot possibly submit every item to detailed critical scrutiny. What we need is to be sure our heads are pointing in the right direction; readability formulae are one way of achieving this. In passing, this view of readability explains the role played by content analysis and textual criticism in this bibliography (for, clearly, more sophisticated tools can be used once the span of attention has been suitably narrowed).

3. In contrast, a more ambitious position is taken by Bormuth. In his view, a modern readability formula should both identify trouble spots and <u>diagnose</u> the cause of the trouble. In his opinion this extra penetration is achieved by connecting modern readability formulae with the results of linguistic research.

4. Even more ambitious is to expect a formula to identify, diagnose and <u>prescribe</u> the treatment. Thus, a few people have thought that prose could be improved by

shortening sentences and words in a crude fashion (that is, without re-thinking and re-designing the communication as a whole). As far as I know, no serious worker now holds this view. It is quite true that readability measures use sentence and word length as basic variables. These variables do correlate highly with measures of comprehension and readability; and this gives the formulae their predictive power. But what one then does to improve the communication is altogether a more complex affair.

B.5.1. General

BORMUTH, J.R. (1967) New developments in readability research. Elementary English 44:840-45

BORMUTH, J.R. (1968) New data on readability in Forging ahead in reading, ed. J.A. Figurel. IRA Proceedings v.12 pt i Newark, Delaware, 1968

BORMUTH, J.R. (1969) Development of readability analyses. Project No.7-0052 Washington, US Office of Education

CHALL, J.S. (1958) Readability: an appraisal of research and application. Ohio State U.Press

COLEMAN, E.B. (1968) Experimental studies of readability. Elementary English 45:166-78, 316-23, 333

GILLILAND, J. (1969) The examination of measures of readability. Reading 3:16-21

GILLILAND, J. (1971) The assessment of readability in Reading and the curriculum, ed. J.E. Merritt. UKRA/Ward Lock

GILLILAND, J. (1972) Readability. UKRA/U. of London Press

GLASERFELD, E.von (1970) The problem of syntactic complexity in reading and readability. J. Reading Behaviour 3:1-14

GRAY, W.S. and LEARY, B.E. (1935) What makes a book readable? U.of Chicago Press/University Microfilms

GUTHRIE, J.T. (1972) Learnability versus readability of texts. J.Educational Research 65(6)273-280

KINGSTON, A.J. and WEAVER, W.W. (1967) Recent developments in readability appraisal. J.Reading 11:44-7

KLARE, G.R. (1963) The measurement of readability. Iowa State U.Press

McLAUGHLIN, G.H. (1966) What makes prose understandable? an investigation into comprehension. PhD thesis, University College London

McLAUGHLIN, G.H. (1968) Proposals for readability measures in Third International Reading Symposium, ed. A.L.Brown and J.Downing. Cassell

MANWILLER, C. (1954) Problems involved in the readability of instructional materials. A report of the tenth annual conference on Reading. U.of Pittsburgh Press, 83-93

MERRITT, J.E. ed. (1971) Reading and the curriculum. Part 4:Readability. Ward Lock

NEUBERGER, S. (1954) Readability. Institute of Scientific and Technical Communicators. (PTI:DG 5; see section B.8.2.1)

TINKER, M.A. (1965) Bases for effective reading. University of Minnesota Press

B.5.2 Readability in special disciplines

Readability formulae are basically designed to cope with continuous prose. Some formulae started life as measures of childrens' reading material; others were validated on adult material. All of them were originally standardised on ordinary language continuous prose. So, to what extent may they be used for scientific, technical or mathematical texts?

The problem can be put like this: any aspect of a text which is not ordinary language prose threatens the accuracy of prediction obtainable by the use of these formulae. In these disciplines a text may have a complex structure which is not specifically catered for by the formula. (The word "structure" is used here with these senses: first, the technical terms, diagrams, formulae and equations which are the visible structure of a discipline; and second, the meta-level discourse about the learning process - the objectives, instructions, questions and answers directed at the student).

Nevertheless, readability measures may have their uses in the scientific domain; after all, the dreadful quality of most scientific prose is renowned, and there is at least a prime facie case for using the measures on any type of continuous prose. The whole issue is complex; scientific texts differ so much in their structure: what would be a valid use of a formula in one case would be inappropriate in another case. The need for caution is clear.

BROWN, W.R. (1965) Science textbook selection and the Dale-Chall formula. Sch. Sci. & Maths 65:164-7

CHAINOVA, L.D., KOMAROVA, I.A. and ZONABEND, F.I. (1970) Complex psychophysiological evaluation of the readability of symbolic information. Voprosy Psikhologie 16(2)163-8 Text in Russian

CLINE, T.A. (1972) Readability of community college textbooks. J.Reading 16:3-37

CRAMER, W. and DORSEY, S. (1960) Science textbooks: how readable are they? Elementary Sch.J. 70:28-33

CROOKS, K.B.M. and SMITH, C.H. (1957) The reading problem in college science instruction. Sci.Ed. 41:54-7

EARP, N.W. (1971) Problems of reading in mathematics. Sch.Sci. & Maths 71:129-33

GILBERT, C.D. (1972) An examination of readability levels for selected basic science texts ED059860 (ERIC)

JOHNSON, D.A. (1947) Readability of mathematics books. Maths Teacher 50:105-10

KANE, R.B. (1970) The readability of maths textbooks revisited. Maths Teacher 63:579-81

KLARE, G.R., MABRY, J.E. and GUSTAFSON, L.M. (1955) The relationship of human interest to immediate retention and to acceptability of technical material. J.Applied Psychology 39:92-5

KLARE, G.R., MABRY, J.E. and GUSTAFSON, L.M. (1955) The relationship of style difficulty to immediate retention and to acceptability of technical material. J.Ed. Psychology 46:287-95

KLARE, G.R., SHUFORD, E.H. and NICHOLS, W.H (1957) The relationship of style difficulty, practice and ability to efficiency of reading and retention. J. Applied Psychology 41:222-5

KULM, G. (1971) Measuring the readability of elementary algebra using the cloze technique. New York, Teachers College, Columbia University

LOCKWOOD, J.B. (1959) Research on problems in reading science. Sch.Sci. & Maths 59:551-6

MALLINSON, G.G. (1951) The readability of high school science texts. Sci.Teacher 18:253-6

MALLINSON, G.G. (1958) Textbook and reading difficulty in science teaching. Sci.Teacher 25:474-75

MALLINSON, G.G. (1964) Reading and the teaching of science. Sch.Sci. & Maths 64:148-53

MALLINSON, G.G., STURM, H.E. and MALLINSON, L.M. (1950) The reading difficulty of textbooks for high-school biology. Amer.Biology Teacher 12:151-6

MALLINSON, G.G., STURM, H.E. and MALLINSON, L.M. (1952) The reading difficulty of textbooks for general science. Sch.Rev.60:94-98

MALLINSON, G.G., STURM, H.E. and MALLINSON, L.M. (1952) The reading difficulty of textbooks for high-school chemistry.J.Chem.Ed. 29:629-31

MALLINSON, G.G., STURM, H.E. and MALLINSON, L.M. (1952) The reading difficulty of textbooks for high-school physics. Sci.Ed. 36:19-23

MALLINSON, G.G. STURM, H.E. and MALLINSON, L.M. (1954) The reading difficulty of textbooks for general physical science and earth science. Sch.Sci. & Maths 54:612-6

MALLINSON, G.G., STURM. H.E. and MALLINSON, L.M. (1957) The reading difficulty of some recent textbooks for science. Sch.Sci. & Maths 57:364-6

MARSHALL, J.S. (1957) The relationship between readability and comprehension of high school physics textbooks. Diss.Abs 17:64

MARSHALL, J.S. (1962) Comprehension and alleged readability of high school physics textbooks. Sci.Ed. 46:335-46

NEWPORT, J.F. (1965) The readability of science textbooks for elementary school. ED010756 ERIC

O'TOOLE, R.J. (1969) Science vocabulary and readability level. J.Res.Sci.Teaching 6(2)161-2

PETERSON, E.M. (1954) Aspects of readability in the social studies. New York, Bureau of Publications, Teachers College, Columbia University

SHAW, J.A. (1967) Reading problems in maths texts. San Diego State College

SMITH, E.A. and KINCAID, J.P. (1970) Derivation and validation of the automated readability index for use with technical materials. Human Factors 12:457-464

STANDLEE, L.S. (1956) Readability of Navy publications. J.Ed.Res. 49:471-3

STEVENSON, E.N. (1937) An investigation of the vocabulary problem in college biology. J.Educational Psychology 28:663-72

TAQUE, J.V. (1953) Readability of texts. High Points 35:16-20

WEINTRAUB, S. (1967) Research: textbooks (history and biology) Reading Teacher 21:283-5

WIEGAND, R.B. (1967) Pittsburgh looks at the readability of maths textbooks. J.Reading 11:201-204

WINTHROP, H. (1968) Problems of communication in science education. Sci.Ed. 52:493-502

ZAINIZER, K. (1956) The readability of economics textbooks. Diss.Abs. 16:84

B.5.3 Formulae and techniques

The formulae listed below are all respectable and may be used with confidence. For a more complete list see Klare's book.

Cloze procedure

This is an important modern procedure, especially interesting in view of Bormuth's research aims. For a list of Cloze references see Klare, Sinaiko and Stolurow

BORMUTH, J.R. (1966) Readability, a new approach. Reading Research Qu 1:79-132

BORMUTH, J.R. (1967) Comparable cloze and multiple-choice comprehension test scores. J.Reading 10:291-99

BORMUTH, J.R. (1967) The implications and use of cloze procedure in the evaluation of instructional programms. Los Angeles, University of California, Center for the Study of Evaluation of Instructional Programs, Occasional report No.13

BORMUTH, J.R. (1968) Cloze readability procedures. Elementary English 45:429-36

FROESE, V. (1971) Cloze readability versus the Dale-Chall formula. Newark, Delaware, International Reading Association

KLARE, G.R., SINAIKO, H.W. and STOLUROW, L.M. (1972) The close procedure, a convenient test for training materials and translations. Int.Rev. Applied Psychology 21(2)77-105

TAYLOR, W.L. (1953) Cloze procedure, a new tool for measuring readability. Journalism Qu. 30:415-33

Dale-Chall formula

This is the most extensively validated technique, and the soundest of the older methods. It is rather time-consuming owing to its use of vocabulary lists

DALE, E. and TYLER, R.W. (1934) A study of the factors influencing the difficulty of reading materials for adults of limited reading ability. Library Qu. 14:384-412

DALE, E. and CHALL, J.S. (1948) A formula for predicting readability. Ed.Res.Bull. 27:11-20, 28

DALE, E. and CHALL, J.S. (1948) A formula for predicting readability: instructions. Ed.Res.Bull. 27:37-54

DALE, E. and CHALL, J.S. (1949) The concept of readability. Elementary English 26:19-26

DALE, E. and CHALL, J.S. (1949) Techniques for selecting and writing readable materials. Elementary English 26:250-58

Flesch formula

This is the formula I have been using on Open University materials. It uses syllabus counts, and so is quicker to use than Dale-Chall. The scores correlate highly with Dale-Chall, and there is an extensive literature describing its use.

BROWN, J.L. (1952) The Flesch formula through the looking-glass. College English 13:393-94

FARR, J.N., JENKINS, J.J. and PATERSON, D.G. (1951) Simplification of Flesch Reading Ease Formula. J. Applied Psychology 35:333-37

FLESCH, R.F. (1943) Marks of readable style. New York, AMS Press 1972

FLESCH, R.F. (1948) A new readability yardstick. J. Applied Psychology 32:221-33

FLESCH, R.F. (1949) New facts about readability. College English 10:225-6

FLESCH, R.F. (1950) Measuring the levels of abstraction. J.Applied Psychology 34:384-90

FLESCH, R.F. (1951) Reply to criticism by Jenkins and Jones. J.Applied Psychology 35:69

JENKINS, J.J. and JONES, R.L. (1951) Flesch's 'Measuring the level of abstraction' J.Applied Psychology 35:68

PITCHER, R.W. (1953) Experimental investigation of the validity of the Flesch readability formula as related to adult materials. University of Michigan, Unpub.doc.diss.

Lorge formula

This older formula is not much used now, but is quite sound.

LORGE, I. (1944) Predicting readability. Teachers College Record 45:404-19

LORGE, I. (1948) The Lorge and Flesch readability formulas, a correction. School and Society 67:141-2

LORGE, I. (1949) Readability formulae, an evaluation. Elementary English 26:86-95

LORGE, I. (1949) Reading and Readability. Teachers College Record 51:90-97

LORGE, I. (1959) The Lorge formula for estimating difficulty of reading materials. New York, Bureau of Publications, Teachers College, Columbia University

Other techniques

May I draw your attention to McLaughlin's SMOG method, and to the possibility of automated readability counts (Coke, below, and Smith and Kincaid in section B.5.2. above).

COKE, E.U. (1970) Note on a simple algorithm for a computer-produced reading ease score. J.Applied Psychology 54(3)208-10

FRY, E. (1968) A graph for estimating readability. J. Reading 11:577-81

FRY, E. (1968) A readability graph that saves time. J.Reading 11:513-6

KEARL, B.E. (1948) A closer look at readability formulas. Journalism Qu. 25:344-48

McLAUGHLIN, G.H. (1968) SMOG grading, a new readability formula. J. Reading 12:639-46

McLAUGHLIN, G.H. (1974) Temptations of the Flesch. Instructional Science, in press.

MUGFORD, L. (1970) A new way of predicting readability. Reading 4:31-5

POWERS, R.D., SUMNER, W.A. and KEARL, B.E. (1958) A recalculation of four adult readability formulas. J.Ed.Psychology 49:99-105

POWERS, R.D. and ROSS, J.E. (1959) New diagrams for calculating readability scores rapidly. Journalism Qu. 36:177-82

SWANSON, C.E. and FOX, H.G. (1953) Validity of readability formulas. J.Applied Psychology 37:114-8

B.5.4 Sentence structure

This and the following section could have been placed under linguistics or instructional psychology. For convenience they are left here next to the readability measures which so frequently refer to them.

COLEMAN, E.B. (1962) Improving comprehensibility by shortening sentences. J.Applied Psychology 46:131-4

HOLLAND, H.F. (1933) The effect of the length and structure of sentences on the silent reading process. Psychological Bull. 30:668-9

McGINITIE, W.H. (1969) Measures of sentence complexity as predictors of the difficulty of reading materials. 77th Annual Convention, American Psychological Association

OSGOOD, C.E. (1963) On understanding and creating sentences. American Psychologist 8:735-51

SHERMAN, L.A. (1893) The literary sentence-length in English prose in Analytics of literature. Boston, Ginn

SMITH, K.H., and McMAHON, L.E. (1970) Understanding order information in sentences in Advances in psycholinguistics, ed. by G.B. Flores D'arcais and W.J.M. Levelt. Amsterdam, North Holland Pub.Co.

BONGERS, H. (1947) The history and principles of vocabulary control. Holland, Wocopi-Woorden

BORMUTH, J.R. (1964) Mean word depth as a predictor of comprehension difficulty. California J.Ed.Res. 15:226-231

CHALL, J.S. and LORGE, I. (1963) Estimating the size of vocabularies of children and adults. J.Experimental Ed. 32:147-57

DALE, E. (1965) Vocabulary measurement: techniques and major findings. Elementary English 42:895-901

DOLCH, E. (1949) The use of vocabulary lists in predicting readability and in developing reading materials. Elementary English 26:17-25

KLARE, G.R. (1968) The role of word frequency in readability. Elementary English 45:12-22

LANGER, J. (1967) Vocabulary and concept development. J. Reading 10:448-56

LUDWIG, M.C. (1949) Hard words and human interest, their effect on readership. Journalism Qu. 26:161-71

PRESSY, L.C. (1924) The determination of the technical vocabularies of the school subjects. School and Society 20:91-6

SMITH, W. (1972) Syntactic control in writing: better comprehension. J.Reading 15:355-8

STAUFFER, R.G. (1966) A vocabulary study comparing reading, arithmetic, health and science texts. Newark, Delaware, International Reading Association

THORNDIKE, E.L. and LORGE, I. (1944) The teacher's word book of 30,000 words. Columbia U.Press

WEINTRAUB, S. (1968) The development of meaning vocabulary in reading. Reading Teacher 22:171, 173, 175 & 191

WEST, M.P. ed. (1953) A general service list of English words, with semantic frequencies and a supplementary word list for the writing of popular science and technology. Longman

WILLIAMS, C.B. (1970) Style and vocabulary: numerical studies. Griffin

WITTY, P.A. (1930) Vocabulary and reading. School and Society 31:268-72

YULE, G.U. (1944) The statistical study of literary vocabulary. Cambridge U.Press

B.6 Analysis of texts

Once trouble spots have been located a wide variety of sophisticated tools of analysis and criticism can be used to clarify the problems faced by the reader. Clarification is, of course, a rather unfixed term. No text ever can be unambiguous, and every sentence uttered can be misconstrued. Nor do we suggest that difficult concepts may be grasped without interpretive skills on the part of the reader. Once again, we do not seek any simple solution to the fundamental problems of human communication (many of these problems almost have the status of laws, so closely united are they to our nature as human beings).

If we could adequately describe the meaning structure of a text we should be better placed to explain the difficulty students have in understanding some of our texts. Much of this difficulty is quite gratuitous, caused by the way texts are constructed, not by the intrinsic nature of the writer's conceptual schema or the inadequacy of the reader's decoding strategies.

B.6.1. Literary criticism

Which is the more fruitful way to describe the structure of a text and the task of interpretation faced by the reader: the critical methods of the humanities or the quantitative methods of the social sciences? This section is an oblique comment on present-day content analysis (below, B.6.3.).

CRYSTAL, D. (1969) Investigating English style. Longman

EMPSON, W. (1949) Seven types of ambiguity. Chatto

GOODMAN, P. (1972) Speaking and language: a defence of poetry. New York, Random

HILDICK, W. (1965) Word for word: a study of authors' alterations with exercises. Faber

HIRSCH, E.D. (1967) Validity in interpretation. Yale U.Press

KAKONIS, T.E. and EVANS, D.A., eds. (1971) Statement and craft: means and ends in writing. New Jersey, Prentice-Hall

LEWIS, C.S. (1961) An experiment in criticism. Cambridge U.Press

PEACOCK, R. (1972) Criticism and personal taste. Oxford Clarendon Press

QMILLER-COUCH, Sir. A. (1921) On the art of reading. Cambridge U.Press

RICHARDS, I.A. (1943) How to read a page: a course in effective reading. Routledge

RICHARDS, I.A. (1924) Principles of literary criticism. Routledge

RICHARDS, I.A. (1929) Practical criticism. Routledge

VALLINS, G.H. (1960) The best English. Pan Books

WEITZ, M. (1972) Hamlet and the philosophy of literary criticism. Faber

B.6.2. Hermeneutics

This subject is closely allied to literary criticism. Hermeneutics started originally as a form of biblical criticism to tackle the question: how can one adjudicate between two different interpretations of the same piece of text? The literature of the subject (which can be retrieved from the short list below) raises fundamental questions about human communication in text form.

HABERMAS, J. (1972) Knowledge and human interests. Heinemann

HODGES, H.A. (1969) Wilhelm Dilthey, an introduction. 3rd rev.ed. Routledge

PALMER, R.E. (1969) Hermeneutics: interpretation theory in Schleiermarcher, Dilthey, Heidegger and Gadamer. Northwestern U.Press

SCHMITHALS, W. (1968) An introduction to the theology of Rudolf Bultman. SCM Press

B.6.3. Content analysis - general

The unsatisfactory state of content analysis is due, in my opinion, to an over-concentration on the problems of politics and mass communication. These are "soft" targets which yield to simple procedures; procedures which tend to be situation-specific because they are not well grounded in theory. Nevertheless, the idea of content analysis is important. For an optimistic view, see Carney, a good general introduction and an interesting attempt to bridge the methods of the humanities with the quantitative techniques of the social sciences.

AITKEN, A.J. (1973) The computer and literary studies. Edinburgh U.Press

AUSTER, D. (1956) Content analysis in audio-visual communication research. AV Comm.Rev. 4:2

BACKMAN, C.W. (1956) Sampling mass media content, the use of the cluster design. American Sociological Rev. 4:102-8

BERELSON, B.R. (1971) Content analysis in communication research. Hafner

BUDD, R.W., THORP, R.K. and DONOHEW, L. (1967) Content analysis of communications. New York, Macmillan

CARNEY, T.F. (1972) Content analysis: a technique for systematic inference from communications. Batsford

DANCE, E.H. (1964) History the betrayer: a study in bias. Hutchinson

DE SOLA POOL, I. (1959) Trends in content analysis. U.of Illinois Press

DE SOLA POOL, I. (1970) The prestige press: a comparative study of political symbols. MIT Press

GERBNER, G., et al. (1969) The analysis of communication content. New York, Wiley

KAPLAN, A. (1943) Content analysis and the theory of signs. Philosophy of Science 10:230-49

LASSWELL, H. (1952) The comparative study of symbols. Stanford U.Press

LASSWELL, H. (1968) The language of politics. MIT Press

LERNER, D., DE SOLA POOL, I. and LASSWELL, H. (1951) Comparative analysis of political ideologies. Public Opinion Qu. 15:713-33

LINDZEY, G., ed. (1968) Handbook of social psychology. 2nd ed. Reading (Mass.) Addison-Wesley

MACCOBY, E.E. (1958) Readings on social psychology. New York, Holt, Rinehart & Winston

NAFZIGER, R.O. (1963) Introduction to mass communication research. Louisiana State U.Press

NORTH, R.C., et al. (1963) Content analysis, a handbook with applications for the study of international crisis. Northwestern U.Press

SPIEGELMAN, M., TERWILLIGER, G. and FEARING, F. (1953) The reliability of agreement in content analysis. J.of Social Psychology 37:175-87

STEWART, M.D. (1943) Importance in content analysis. Journalism Qu. 20:286-93

STONE, P.J. (1962) The general inquirer, a computer system for content analysis and retrieval based on the sentence as a unit of information. Behavioural Science. 7:484-94

STONE, P.J. (1968) User's manual for the General inquirer. MIT Press

STONE, P.J., et al. (1966) The general inquirer, a computer approach to content analysis. MIT Press

WILLIAMS, R. (1968) Britain in the sixties: communications. Penguin

B.6.4. Content analysis : textbooks

The content analysis of textbooks is in a primitive state, but the items listed below do contain the occasional idea which might be of use.

ALLAN, T. (1969) An approach to selecting social studies curricula. Washington U.

BEARD, J.G. (1967) Comprehensibility of high school textbooks: association with content area. J. Reading 11:229-34

BROADBELT, S. (1972) Using mathematical criteria for selecting social studies textbooks. Clearing House 46:487-92

BROWN, R.A. (1969) Selecting social studies textbooks. Social Education 33:314-20, 324

CHARTERS, W.W. (1950) Pre-testing a college textbook. Ed.Res.Bull. 29:85-95,112

CHILD, I.L., POTTER, E.H., and LEVINE, E.M. (1946) Children's textbooks and personality development. Psychological Monographs 60: No.3 whole No.279

CHIPLEY, D.R. (1969) Structural criteria for textbook evaluation in art education. Studies in Art 11:61-5

COLTHAM, V.B. (1970) Assessing history textbooks. Teaching History 1:213-8

COMMITTEE of the National Council of Teachers of Mathematics. (1965) Aids for evaluation of mathematics textbooks. Maths Teacher 58:467-73

COMPTON, C.A. (1970) Exercises are not problems. Physics Teacher 8:235-40

CRONBACH, L.J. (1955) Text materials in modern education. U.of Illinois Press

DUNFEE, M. (1967) Elementary school science, a guide to current research. Washington, Association for Supervision & Curriculum Development

EBEL, R.L., ed. (1969) Encyclopedia of educational research. 4th ed. Macmillan. Textbooks: pp.1470-78

EDUCATIONAL Products Information Exchange Institute. (1969) Evaluation practice used in the selection of educational materials and equipment. New York State.

NICHOLS, A.S. (1971) Evaluating textbooks for elementary social studies. Social Education 35:290-4, 304

RAPPAPORT, D. (1970) Definitions: concensus or confusion? Maths Teacher 63:223-8

RUDOLF, W.B. (1970) Estimates of the relative sequential constraint for selected passages from maths books and the relationship of these measures to reading comprehension. American Educational Research Association

STRAIN, J.E. (1969) A recent development in English Language education in Japan: materials analysis. Cambridge, Association Internationale de Linguistique Appliquee

WEINTRAUB, S. (1967) Research: textbooks. Reading Teacher 21:283-5

B.7 Reading

This bibliography is not concerned with research into the learning processes of young children; which explains why most of the extensive literature on reading has been omitted. We are interested in the reading strategies of adults and the basic limitations on speed of reading; the items below provide an introduction to these topics.

B.7.1. General

AUGSTEIN, S. (1971) Reading strategies and learning outcomes. PhD thesis, Brunel.

BRUNING, R.H. (1970) Short-term retention of specific factual information in prose contexts of varying organisation and relevance. J.Ed. Psychology 61:186-92

CARROLL, J.B. and FREEDLE, R.O., eds. (1972) Language comprehension and the acquisition of knowledge. New York, Wiley

DAVIS, F.B. (1972) Psychometric research in comprehension in reading. Reading Research Qu. 7:628-78

DEARBORN, W.F., JOHNSONT, P.R. and CARMICHAEL, L. (1949) Oral stress and meaning in printed material. Science 110:404

GAITEGNO, C. (1969) Reading with words in colour. Educational Explorers

GEERLOFS, M.W. and KLING, M. (1968) Current practices in college and adult developmental reading programs. J.Reading 11:517-20, 569-75

GEYER, J.J. (1972) Comprehensive and partial models related to the reading process. Reading Research Qu. 7:541-87

HUEY, E.B. (1968) The psychology and pedagogy of reading. MIT Press

JUDD, C.H. and BUSWELL, G.T. (1922) Silent reading, a study of various types. Supp.Ed.Monographs No.23 Chicago U.Press

KING, M., ELLINGER, B.D. and WOLF, W., eds. (1967) Critical reading. Philadelphia, Lippincott

KOLERS, P.A. (1972) Experiments in reading. Scientific American 227:84-91

MORTON, J. (1959) Investigation into the effects of an adult reading course. Occupational Psychology 33:222-37

SMITH, H.K. (1967) The responses of good and poor readers when asked to read for different purposes. Reading Research Qu. 3:53-83

THOMAS, L.F. and FARNES, J.F. (1971) A reading recorder. Brunel U.

THOMAS, L.F. and AUGSTEIN, S. (1970) An experimental approach to learning from written material. Brunel U.

VERNON, M.D. (1931) Characteristics of proof-reading. Brit.J.Psychology 21:368-81

VERNON, M.D. (1971) Reading and its difficulties. Cambridge U.Press

VERNON, P. (1962) The determinants of reading comprehension. Educational and Psychological Measurement 22:269-286

WATTS, W.J. (1973) Reading to learn. Brit.J.Ed.Tech. 4:132-41

WEAVER, W.W. (1969) Information-flow difficulty in relation to reading comprehension. J.Reading Behaviour 1:41-9

WILSON, M.C. (1948) The effect of amplifying material upon comprehension. J.Experimental Ed. 13:5-8

WRIGHT, P. (1968) Reading to learn. Chemistry in Britain 4:x,445-50

B.7.2. Reading speed

BUZAN, T. (1971) Speed reading. Sphere Books

*DE LEEUW, M. and DE LEEUW, E. (1965) Read better, read faster, a new approach to efficient reading. Penguin

HANSON, E. (1968) Factors relating to reading rates. Reading Teacher 21:663-5, 667, 669

LETSON, C.T. (1959) The relative influence of material and purpose on reading rates. J.Ed.Research 52:238-40

PIERCE, J.R. and KARLIN, J.E. (1957) Reading rates and the information rate of the human channels. Bell System Technical J. 36:497-516

TINKER, M.A. (1939) Speed versus comprehension by level of difficulty. J.Ed.Psychology 30:81-94

B.8 Writing Style

This section is prescriptive rather than descriptive. It advises directly how good prose should be constructed: it contains the distilled experience of professional writers.

B.8.1. General

The books listed here are justly famous and influential. The advice to journalists (Evans and Sellars) deserves a wider audience: sub-editors have a whole range of tools that might be used to advantage by educational writers.

BROWN, J.C. (1942) A word in your ear. Cape

BROWN, J.C. (1943) Just another word. Cape

CASSON, J. (1968) Using words: verbal communication in industry. Duckworth

CHASE, S. (1938) The tyranny of words. New York, Harcourt, Brace

EVANS, H. (1972) Editing and design, a five-volume manual of English, typography and layout. Heinemann
Book One: Newsman's English
Book Two: Handling newspaper text in preparation
Book Three: News headlines in preparation

FLESCH, R.F. (1960) How to write, speak and think more effectively. New York, Harper & Row

FOWLER, H.W. and FOWLER, F.G. (1931) The King's English. Oxford U.Press

FOWLER, H.W. (1965) A dictionary of modern English usage. 2nd ed.rev. by Sir E. Gowers. Oxford U.Press

FOWLER, H.W. (1965) Modern English usage. 2nd ed.rev. by Sir E. Gowers. Oxford U.Press

GOWERS, Sir E. (1973) Complete plain words. 3rd ed.rev. by Sir B. Fraser. Penguin

GRAVES, R. and HODGE, A. (1965) The reader over your shoulder, a handbook for writers of English prose. Cape

GUNNING, R. (1968) The technique of clear writing. Rev.ed. New York, McGraw-Hill

HERBERT, A.P. (1935) What a word! Methuen

PARTRIDGE, E. (1953) You have a point there: a guide to punctuation and its allies. Hamilton

PARTRIDGE, E. (1965) Usage and abusage: a guide to good English. 6th ed. Hamilton

PICKFORD, L.J. and SMITH, L.E.W. (1969) A student handbook on note-taking, essay-writing, special study and thesis presentation. Ginn

QUILLER-COUCH, Sir A. (1916) On the art of writing. Cambridge U.Press

RAY, R.M. (1970) Revising and refining a manuscript. Reading Teacher 23(5)436-9, 46.

READ, H. (1963) English prose style. Bell

ROE, I. (1972) A style of your own: a commonsense guide to clear English. David & Charles

SELLERS, L. (1968) Doing it in style: a manual for journalists, PR men and copy-writers. Pergamon Press

SELLERS, L. (1968) The simple subs book: a manual for sub-editors (and would-be sub-editors) on newspapers, trade and house journals. Pergamon Press

STRUNK, W.R. and WHITE, E.B. (1962) The elements of style. Collier-Mac

THOMSON, K.G. (1970) Guide to letter writing, Pan Books

THOMPSON, W.N. (1957) Fundamentals of communication: an integrated approach. New York, McGraw-Hill

VALLINS, G.H. (1951) Good English: how to write it. Pan Books

VALLINS, G.H. (1953) Better English. Pan Books

WILLIS, H. (1973) Structure, style and usage. 3rd ed. New York, Holt, Rinehart and Winston

B.8.2. Writing scientific and technical texts

By way of contrast, most books on "technical writing" are second-rate and derivative. One exception is Kapp, who gave a brief glimpse of the possible.

BAKER, J.R. (1955) English style in scientific papers. Nature 176:851-2

COLEMAN, P. (1969) The technologist as writer. Toronto, Ryerson Press

COOPER, B.M. (1964) Writing technical reports. Penguin

CROWTHER, J.G. (1970) Half a century of science writing. New Scientist 47:243-5 30 July

DUNKLEY, B. (1972) Do but themselves confound. Students Q.J. Institution of Electrical Engineers March p.13

EDGERTON, S.G. (1969) Is there a scientific method? Hist.Educ.Qu. 9:492-6

FUNKHOUSE, G.R. (1969) Levels of science writing in public information sources. Journalism Qu. 46(4)721-6

FUNKHOUSE, G.R. and MACCOBY, N. (1971) Communicating specialized science information to a lay audience. J.Communication 21(1)58-71

GILMAN, W. (1961) The language of science, a guide to effective writing. English Universities Press

GRIFFEL, W. (1971) Writing for technical journals. Engineering Materials and Design 14:220-4

HEBB, D.O. and BINDRA, D. (1952) Scientific writing and the general problem of communication. Am.Psychologist 7:569-73

HERBERT, A.J. (1965) The structure of technical English. Longman

JORDAN, S. (1971) Handbook of technical writing practices. New York, Wiley

KAPP, R.O. (1948) The presentation of technical information. Constable

McLAUGHLIN, G.H. (1966) Comparing styles of presenting technical information. Ergonomics 9(3)257-9

MAMBERT, W.A. (1968) Presenting technical ideas, a guide to audience communication. New York, Wiley

WOODFORD, F.P., ed. (1968) Scientific writing for graduate students: a manual for the teaching of scientific writing. Rockefeller U.Press

B.8.2.1 PTI papers. Institute of Scientific and Technical Communicators. 17 Bluebridge Avenue, Brookmans Park, Hatfield, Herts.

My comment on Kapp can now be expanded. He was Professor of Engineering at University College London, and the initiator of the Presentation of Technical Information group (PTI). Under the guidance of Kapp and B.C. Brookes this small group of academics, engineers and writers held regular seminars for some years. The intellectual standards of these discussions were generally high; leading academics from many disciplines joined in actively. Some of these seminars were recorded, and are listed here. Kapp is now dead, and the PTI no longer exists as a separate entity. The Institute of Scientific and Technical Communicators (ISTC) was formed from the PTI and two larger groups; it is a worthy, but unexciting organisation which has ambitions to become a professional body for technical communicators. For my part, I would rather have the excitement, the ideas and the calibre of the PTI any day.

BROOKES, B.C. Style manuals for research departments, n.d. DG29

BROOKES, B.C. and HARRIS, N.L. Getting writers to start, n.d. DG21

BROSAN, G.S. (1969) Can technologists communicate? DG33

GODFREY, J.W. (1952) The preparation and production of technical instructional manuals DG1

GREENAWAY, F. (1954) Some historical aspects of the preparation of scientific information DG4

HAZELL, W. (1957) The preparation of technical handbooks DG13

HOCKLEY, H., ROBERTS, F. and WILTSHIRE, R. Training technical writers, a symposium, n.d. DG14

HOLLOWAY, A.H. The presentation of technical information in other countries, n.d. DG15

HORNE, J. (1956) PTI in a foreign language. DG12

KAPP, R.O. Standardisation of technical concepts and terms, n.d. DG16

KAPP, R.O. (1953) The first draft DG3

KIRKMAN, J. (1970) Assessing technical writing DG34

MITCHELL, J. (1962) The American approach to technical writing: professional and academic DG23

PARR, G. (1952) Technical publications DG2

PAUL-JONES, C. (1961) On the formation and presentation of technical terms DG22

RIVINGTON, C. (1962) How can technical books be improved? DG24

B.8.3 Basic English

Basic English. is, in my opinion, the best of the many attempts to build an international second language. Ogden created an integrated linguistic system based on 850 words which are used according to strict rules, and may be extended under prescribed conditions. It is possible to write serious scientific works in Basic: there is even a Basic science dictionary. The use of Basic in Open University Foundation Courses is an idea worth considering: our system might thereby be made accessible to a wider range of students.

BIBLE (1940) The New Testament in Basic English. Cambridge U.Press

FLESCH, R. (1944) How basic is Basic English? Harper's 188:339-43

GRAHAM, E.C., ed. (1965) The science dictionary in Basic English. Evans

GRAHAM, E.C. and FLORENCE, P.S. (1964) Basic English as an international language for science and the social sciences. Evans

HALDANE, J.B.S. (1935) The outlook of science (put into Basic by W.Empson). Routledge

LOCKHART, L.W. (1942) Basic English picture talks. BEPC

NEURATH, O. (1937) Basic English by Isotype. BEPC

OGDEN, C.K. (1932) Basic words, a detailed account of their uses. BEPC

OGDEN. C.K. (1935) Basic step by step. Routledge

OGDEN, C.K. (1937) Basic English and grammatical reform. BEPC

OGDEN, C.K. (1940) The general Basic dictionary. Evans

OGDEN, C.K. (1942) Basic English for science. Routledge

OGDEN, C.K. (1950) Word stress and sentence stress. Orthological Inst.

OGDEN, C.K. (1968) Basic English: international second language. Rev.ed. New York, Harcourt

RICHARDS, I.A. and OGDEN, C.K. (1943) Basic English and its uses. Routledge

RICHARDS, I.A. (1968) Design for escape: world education through modern media. New York, Harcourt

ROSSITER, P.M. (1937) Basic English for geology. BEPC

WEST, M.P. and SWANSON, E. (1934) A critical examination of Basic English. Toronto U.Press

C. VISUAL DESIGN

The third part of the bibliography covers those aspects of visual design which are relevant to the design of educational texts for adult readers. Research into television presentation has not been listed unless it relates to the field of text design.

C.1 General

BAKER, C.A. and GRETHER, W.H. (1954) Visual presentation of information. Wright Air Development Center Technical report 54-160, Wright Patterson Air Force Base

BAKER, E.L. and POPHAM, W.J. (1969) Value of pictorial embellishments in a tape-slide instructional programs. AV Comm.Rev. 17:397-403

BOWMAN, W.J. (1968) Graphic communication. New York, Wiley

BRIGGS, L.J. (1970) Handbook of procedures for the design of instruction. American Institutes for Research, Pittsburgh

CHAN, A. and TRAVERS, R.M.W. (1966) The effect on retention on labelling visual displays. Am.Ed.Res.J. 3:55-67

CHRISTENSEN, C.M. and STORDAHL, K.E. (1955) The effect of organisational aids on comprehension and retension. J.Ed.Psychology 46(2)65-74

CORNOG, D.Y. and ROSE, F.C. (1967) Legibility of alpha-numeric characters and other symbols.II,a reference handbook. US Dept.of Commerce, National Bureau of Standards misc.pubs 262-2

CRANE, W. (1896, reissued 1972) Of the decorative illustration of books old and new. Bell

DWYER, F.M. (1970) Exploratory studies in the effectiveness of visual illustrations. AV Comm.Rev. 18(3)235-40

DWYER, F.M. (1971) Color as an instructional variable. AV Comm.Rev. 19(4)399-416

DWYER, F.M. (1972) A guide for improving visualised instruction. State College Pennsylvania Learning Services

ENRICK, N.L. (1972) Effective graphic communication. Princeton, Auerbach

FLEMING, M.L. (1967) Classification and analysis of instructional illustrations. AV Comm.Rev. 15:246-56

FLEMING, M.L. (1970) Perceptual principles for the design of instructional materials. Bloomington, Indiana University, AV Center

GIBSON, J.J. (1954) A theory of pictorial perception. AV Comm.Rev. 2:3-23

GROPPER, G.L. (1963) Why is a picture worth a thousand words? AV Comm.Rev. 11:75-95

GROPPER, G.L. (1966) Comment on sense-impression response to differing pictorial and verbal stimuli. AV Comm.Rev. 14:91-7

GROPPER, G.L. (1966) Learning from visuals: some behavioural considerations. AV Comm.Rev. 14:37-6

HAGUE, C.W. (1957) Printing and allied graphic arts. Milwaukee, Bruce Pub.Co.

HAMILTON, E.A. (1970) Graphic design for the computer age: visual communication for all media. New York, Van Nostrand

HAWKINS, M.L. (1971) A model for the effective use of pictures in teaching social studies. AV Instructor 16:46-48

HITT, W.D., et.al. (1961) Development of design criteria for intelligence display formats. Human Factors 3:86-92

HOLLIDAY, W.G. (1973) Critical analysis of pictorial research related to science education. Sci.Ed. 57(2)201-14

IVINS, W.M. (1953) Prints and visual communication. Routledge

KNOWLTON, J.Q. (1966) On the definition of 'picture' AV Comm.Rev. 14:157-83

KOENKE, K. and OTTO, W. (1969) Contributions of pictures to children's comprehension of the main idea in reading. Psychology in the schools 6:298-302

MOORE, D.M. and SASSE, E.B. (1971) Effect of size and type of still projected pictures on immediate recall of content. AV Comm.Rev. 19:437-50

MULLER-BROCKMAN, J. (1971) A history of visual communication. Tiranti

MURGIO, M.P. (1969) Communications graphics. New York, Van Nostrand

POULTON, E.C., WARREN, T.T. and BOND, J. (1970) Egonomics in journal design. Applied Ergonomics 1(4):207-9

RICHARDS, O.W. and MACKLIN, P. (1971) Colored overhead transparencies: gain or seeing loss? AV Comm.Rev. 19:432-6

SAMUELS, S.J. (1970) Effects on pictures on learning to read, comprehension and attitudes. Rev.Ed.Res. 40:397-407

SINGLETON, W.T. (1969) Display design: principles and procedures. Ergonomics 12:519-31

SINGLETON, W.T. (1971) The ergonomics of information presentation. Applied Ergonomics 2(4):213-20

SMITH, K.U. (1960) The scientific principles of text book design and illustration. AV Comm.Rev. 8:31-46

SNOW, R.E. and SALOMON, G. (1968) Aptitudes and instructional media. AV Comm.Rev. 16:341-357

STRONG, H. (1973) Pictorial and verbal media in self-instructional procedural skills. AV Comm.Rev. 21:225-32

TOMLINSON, N. and STEVENS, J. (1972) Reflections on the process of visual design. Instructional Sci. 1(1):89-120

TRAVERS, R.M.W. and ALVARADO, V. (1970) The design of pictures for teaching children in elementary school. AV Comm.Rev. 18:47-64

VARDAMAN, G.T. (1970) Effective communication of ideas. New York, Van Nostrand

VARDAMAN, P.B. (1971) Forms for better communication. New York, Van Nostrand

VERNON, M.D. (1950) The visual presentation of factual material. Brit.J.of Ed.Psychology 20:174-85

VERNON, M.D. (1953) The value of pictorial illustrations. Brit.J. Ed.Psychology 23:180-87

VERNON, M.D. (1954) The instruction of children by pictorial illustration. Brit J.Ed.Psychology 24:171-9

C.1.1. Visual perception

ARNHEIM, R. (1956) Art and visual perception. Faber and Faber

ARNHEIM, R. (1969) Visual thinking. U.of California Press

BOURISSEAU, W., DAVID, O.L. and YAMAMOTO, K. (1965) Sense-impression responses to differing pictorial and verbal stimuli. AV Comm.Rev. 13:249-58

BOWER, T.G.R. (1965) Visual selection: scanning vs filtering. Psychonomic Sci. 3:561-2

CHAN, A., TRAVERS, R.M.W. and VAN MONDFRANS, A.P. (1965) The effect of colored embellishments of a visual array on a simultaneously presented audio array. AV Comm.Rev. 13:159-64

CHEN, Y.W. (1971) Visual discrimination of color normals and color deficients. AV Comm.Rev. 19:417-31

COPPEN, H. (1970) Visual perception: a review of the literature relating to studies relevant to the development of teaching materials in the Commonwealth. Commonwealth Secretariat

GREGORY, R.L. (1970) The intelligent eye. Weidenfeld & Nicolson

HABER, R.N. (1970) How we remember what we see. Sci.Am. 222(5):104-112

HSIA, H.J. (1968) On channel effectiveness. AV Comm.Rev. 16:245-67

MACH, E. (1959) The analysis of sensations and the relation of the physical to the psychical. New York, Dover 5th rev.ed.

MACKWORTH, N.H. (1968) The wide angle reflective eye camera for visual choice and pupil size. Perception & Psychophysics 3:32-4

MACKWORTH, N.H. and MORANDI, A.J. (1967) The gaze selects informative details within pictures. Perception & Psychophysics 3:32-4

MARTIN, C.J. (1967) Comprehension of full length and telegraphic materials among blind children. Educational Research series No.42 Michigan State University, East Lancing Coll.of Ed.

MORASKY, R.M. (1970) Time required to process information as a function of question placement. Am.Ed.Res.J. 7:561-7

MORASKY, R.M. (1972) Eye movement as a function of adjunct question placement. Am.Ed.Res.J. 9:251-61

NEISSER, U. (1964) Visual search. Sci.Am. 210:94-102

SIMON, M.A. and BARENFELD, M. (1969) Information-processing analysis of perceptual processes in problem-solving. Psychology Rev. 76:473-83

STRONGMAN, K.T. (1966) Visual search with meaningful and no meaningful material. Qu.J.Experimental Psychology 18:164-8

TIKHOMIROV, O.K. and POZNYANSKAYA, E.D. (1966) An investigation of visual search as a means of analysing heuristics. Soviet Psychology 5:2-15

TRAVERS, R.M.W. (1970) Man's information system: a primer for media specialists and educational technologists. Scranton (Penn.) Chandler

VERNON, M.D. (1953) Perception and understanding of instructional television programmes. Brit.J.Psychology 44:116-26

VERNON, M.D. (1962) The psychology of perception. Penguin

C.2 Charts, graphs and tables

Otto Neurath's Isotype system is a coherent set of ideas especially adapted to the presentation of quantitative information. Anyone who regularly handles such data should study carefully the work of this group. The Isotype Collection has been donated to Reading University by Marie Neurath, where it now awaits classification. Of the other items listed below, the book by Brinton is an interesting historical source.

ALLCOCK, H.J. and JONES, J.R. (1950) The nomogram. Pitman.

BEEBY, A.W. and TAYLOR, H.P.J. (1973) How well can we use graphs? Communicator of Scientific & Technical information No.17:7-11

BRINTON, W.C. (1916) Graphic methods of presenting facts. New York, Engineering Magazine

CARROLL, P. (1960) How to chart data. New York, McGraw-Hill

CARTER, L.F. (1947) An experiment of the design of tables and graphs used for presenting numerical data. J.Applied Psychology 31:640-50

CHRISS, M. and HAYES, G.R. (1964) Introduction to charts and their use. Glasgow, Brown

CULBERTSON, A.M. and POWERS, R.D. (1959) A study of graph comprehension difficulties. AV Comm.Rev. 7:97-110

FELICIANO, G.D., POWERS, R.D. and KEARL, B.E. (1963) The presentation of statistical information. AV Comm. Rev. 11(3)32-9

LOCKWOOD, A. (1969) Diagrams: a visual survey of graphs, maps, charts, and diagrams. Studio Vista

MODLEY, R. (1952) Pictographs and graphs. New York, Harper

NEURATH, M. (1965) Living with one another. Max Parrish

NEURATH, M. (1971) Otto Neurath and isotype. Graphic Design, Kodansha Ltd

NEURATH, M. (1974) Isotype. Instructional Science, in press

NEURATH, M and COHEN, R.S. (1973) Otto Neurath: empiricism and sociology. Netherlands, Reidel

NEURATH, O. (1936) International picture language. Kegan Paul

NEURATH, O. (1973) Basic by Isotype. Kegan Paul

NEURATH, O. and NEURATH, M. (1939) Modern man in the making. New York, Knopf

PETERSON, L.V. and SCHRAMM, W. (1955) How accurately are different kinds of graphs read? AV Comm.Rev. 2(2)178-89

SCHUTZ, H.G. (1961) An evaluation of formats for graphic trend displays Experiments II & III. Human Factors 3:99-107, 108-119

SCHMID, C.F. (1954) Handbook of graphic presentation. New York, Ronald

VERNON, M.D. (1946) Learning from graphical material. Brit.J.Psychology 36:145-58

VERNON, M.D. (1951) Learning and understanding. Qu.J.Exp. Psychology 3:19-23

WASHBURNE, J.N. (1927) An experimental study of various graphic, tabular and textual methods of presenting quantitative material. J.Ed.Psychology 18:361-76, 465-76

WRIGHT, P. (1968) Using tabulated information. Ergonomics 11:331-43

WRIGHT, P. and FOX, K. (1970) Presenting information in tables. Applied Ergonomics 1(4)234-42

WRIGHT, P. (1972) Explicit and implicit tabulation formulas. Ergonomics 15:175-87

WRIGHT, P. (1973) Understanding tabular displays in The visual presentation of technical data, ERS/SIAD U.of Reading Typographic Unit

ZEISEL, H. (1968) Say it with figures. 5th rev.ed. New York, Harper & Row

C.3 Scientific and technical diagrams

Our understanding of scientific diagrams is pre-scientific: we use them all the time, yet virtually nothing of significance is known about them.

AMOS, S.W. (1973) Presenting maintenance information: techniques developed by BBC use functional diagrams and minimum of text. Wireless World 79:510-14

BABBAGE, C. (1961 edition) Calculating engines. New York, Dover

BOOKER, P.J. (1963) A history of engineering drawing. Chatto and Windus

DWYER, F.M. (1969) An experiment in visual communication. J.Res.Sci. Teaching 6:185-95

DWYER, F.M. (1971) Assessing student's perception of the instructional value of visual illustrations used to complement programmed instruction. Programmed Learning & Ed.Tech. 8:73-80

DWYER, F.M. (1972) The effects of overt responses in improving visually programmed science instruction. J.Res.Sci.Teaching 9:50

HOW Things work, the universal encyclopedia of machines. (1972) Paladin

JAKES, B. (1973) An introduction to FIMS and DDS. The Communicator No.15, 2-7

KONZ, S.A. and DICKEY, G.L. (1969) Manufacturing assembly instructions. Ergonomics 12(3)369-82

MALTER, M. (1947) The ability of children to read a process-diagram. J.Ed.Psychology 38:290-8

MALTER, M. (1947) The ability of children to read corss-sections. J.Ed.Psychology 38:157-66

ROLFE, J.M. (1971) Numerical display problems. Applied Ergonomics 2:7-11

SPENCER, J. (1973) Presentation of information on engineering drawings in The visual presentation of technical data, ERS/STAD. U.of Reading, Typography Unit

TOULMIN, S. (1953) The philosophy of science. Hutchinson

WEISBERG, J.S. (1970) The use of visual advance organisers for learning earth science concepts. J.Res.Sci.Teaching 7:161-5

ZWEIFEL, F.W.A. (1961) A handbook of biological illustration. U.of Chicago Press

C.4 Algorithms

With relief we come to an area where something is known: the use of ordinary-language algorithms for presenting instructions, decisions, rules and regulations. An ordinary-language algorithm may take the form of a branching tree or a list structure; it is (in the words of Lewis) "a canonical form for representing the structure of 'if.... then... unless' conditionals". The theory and practice of algorithms was hammered out more or less independantly and simultaneously in two places: the Psychology Department of University College London (Wason and Jones) and Cambridge Consultants Ltd (especially by Lewis). Most of the papers listed below are of high quality; those by Lewis unite conceptual depth with clarity of expression, and are especially recommended. Almost all the papers listed are English; this work is virtually unknown in North America.

BUNGE, K. ed. (1967) Programmed Learning and the language laboratory: collected papers. Longmac

CAMBRIDGE Consultants (Training) Ltd. (1967) Evaluation report on a training programme for instrument artificers

CAMBRIDGE Consultants (Training) Ltd. (1969) Employer's guide to claiming grants. Wool, Jute and Flax Industry Training Board

DAVIES, I.K. (1970) Algorithms, a strategy for overcoming communication problems. RAF Ed.Bull 7:39-50

DAVIES, I.K. (1971) Selecting an appropriate strategy for communicating complex rules, procedures and instructions in The management of learning. ch.9. New York, McGraw-Hill

GANE, C.P., HORABIN, I.S. and LEWIS, B.N. (1966) The simplification and avoidance of instruction. Industrial Training International 160-5

GANE, C.P. HORABIN, I.S. and LEWIS, B.N. (1967) Algorithms for decision making in Aspects of educational technology, ed. by D.Unwin and J.Needham. Methuen

GANE, C.P. and WOOLFENDEN, P.J. (1968) Algorithms and the analysis of skilled behaviour. Industrial Training International 213-7

GARLAND, K. (1968) Some observations and proposals relating to the design of block diagrams and flow charts, in The visual communication Artists and Designers Conference, Harwell

JONES, S. (1964) Why can't leaflets be logical. New Society No.102

JONES, S. (1968) Design of instruction. HMSO

LANDA, L.J. (1965) Algorithms and programmed instruction in Papers of the IVth all-Russian conference on programmed instruction and the application of technical means. Moscow (in Russian)

LANSKY, K. (1969) Learning algorithms as a teaching aid. Recall 1(3):81-98

LEWIS, B.N. (1970) Decision logic tables for algorithms and logical trees. CAS occasional papers No.12 HMSO

LEWIS, B.N. (1971) Getting the message across. NCSS Working Seminar: the methods of communicators applied to social workers

LEWIS, B.N. and COOK, J.A. (1968) Some comments and recommendations concerning inter-code reliability. Psychological Reports 22:213-25

LEWIS, B.N. and COOK, J.A. (1969) Toward a theory of telling. Int.J. Man-Machine Studies 1:129-76

LEWIS, B.N. and EDWARDS, K. (1966) Short cuts to problem solving. New Society :607-9 20 October

LEWIS, B.N., HORABIN, I.S. and GANE, C.P. (1967) Case studies in the use of algorithms. Pergamon Press

LEWIS, B.N., HORABIN, I.S. and GANE, C.P. (1967) Flow charts, logical trees and algorithms for rules and regulations. CAS occasional paper No.2. HMSO

LEWIS, B.N. and WOOLFENDEN, P.J. (1969) Algorithms and logical trees, a self-instructional course. Cambridge, Algorithms Press

RYAN, W.S., WILLIS V.A.C. and BROOK, P.W. (1970) The increasing use of logical trees in the Civil Service. HMSO

SHIMBERG, H.L. (1973) Effective presentation of maintenance information using decision logic tables. Technical Comm. 20(1):10-13

TRAKHTENBROT, B.A. (1963) Algorithms and automatic computing machines. Boston, Heath

WASON, P.C. (1968) The drafting of rules. New Law J. 118:548-9

WASON, P.C. (1972) The understanding of regulations in Psychology of reasoning, by P.C. Wason and P.J. Johnson-Laird. Batsford

WASON, P.C. and JONES, S. (1965) The logical tree project. University College London, Department of Psychology

WHEATLEY, D.M. and UNWIN, A.W. (1972) The algorithm writer's guide. Longman

WRIGHT, P. (1969) Transformations and the understanding of sentences. Language and Speech 12:156-66

WRIGHT, P. (1971) Writing to be understood: why use sentences? Applied Ergonomics 2:207-9

WRIGHT, P. (1973) Written information: some alternatives to prose for expressing the outcomes of complex contingencies. J.Applied Psychology 57(2)160-66

C.5 Maps

ADAMS, K.R. (1967) Cartographic design standards. US Army European Research Office Report, Contract No.DAJA 37-67-C-0413

DAVIS, O.L. (1968) Graphic illustrations with geographic text. Peabody J.Ed. 46(1)39-44

HOPKIN, V.D. (1969) Information on maps for air and ground use. RAF Institution of Aviation Medicine, report No.S.91

HOPKIN, V.D. (1973) Human factors in the design of maps. in The visual presentation of technical data. U.of Reading, Typography Unit

MONKHOUSE, F.J. and WILINSON, H.R. (1971) Maps and diagrams, their compilation and construction. 3rd rev.ed. Methuen

MURRELL, J.F. (1970) Aircrew choice of information on a topographical maps. RAF Institute of Aviation Medicine, report No.481

MURRELL, J.F. (1970) Experimental methods for evaluating maps in Geographic orientation in air operations, ed. J.J. McGrath. Proceedings of a JANAIR symposium. Human Factors Research Inc. report 101-1, pp.154-61

ROBINSON, A.H. (1952) The look of maps, an examination of cartographic design. Madison, U.of Wisconsin Press

SHAW, A. (1972) Objective evaluation of graphic displays of information. School of Graphic Design, Royal College of Art, London

SHAW, A. (1973) Some methodological problems in legibility research in The visual presentation of technical data, ERS/SIAD. U. of Reading, Typography Unit

SRNKA, E. (1968) The regularities of cartographic generalization, their analytic derivation. Paper presented at ICA Conference, Delhi

WOOD, M. (1968) Visual perception and map design. Cartographic J.5:54-64

C.6 Typography

This is an extensively researched field. The standard reference work is Tinker (1963), though the newcomer should start with the more digestible books by Burt and Spencer. The keen student will also need the recent bibliography by Hartley, Fraser and Burnhill which lists typographic research relevant to the production of instructional materials. Because these excellent sources exist I have contained my list to a small number of items which are relevant to our interests. Special mention again goes to journalism (Evans and Hutt) for throwing a refreshing light on the problems of typography and layout.

ANON (1969) of style for authors, editors and copywriters. 12th ed. U. of Chicago Press

ANON, (1972) Style manual. Canberra, Australian Govt. Pub.Service

BOWLER, B. (1970) The word as image. Studio Vista

BURNHILL, P. (1970) Typographic education: headings in text. J.Typographic Res. 4(4)353-65

BURT, C. (1959) A psychological study of typography. Cambridge U.Press

BURTT, H.E. (1949) Typography and readability. Elementary English 20:212-21

CARTE, J.A. (1973) Filtering typographic noise from technical literature. Technical Communication 20(3)12-13

CARVER, R.P. (1970) The effect of 'chunked' typography on reading rate and comprehension. J.Applied Psychology 54(3)288-96

CHAUNDY, T.W. (1954) The printing of mathematics. Oxford U.Press

EVANS, H. (1973) Editing and design, a five-volume manual of English, typography and layout. Heinemann
Book four: Picture editing in preparation
Book Five: Newspaper design

FOSTER, J.J. (1970) A study of the legibility of one and two column layout for BPS publications. Bull.Brit. Psychological Soc. 23:113-4

FOWLER, G.H.E. (1969) Typing topics I and II. O & M Bull. 24:124-9, 212-21

FROSHAUG, A. (1964) Typographic norms. Birmingham/London, Kynoch Press/DADA

GOLDRING, M. (1966) Rational typographic design, in Advance in computer typesetting: proceedings of 1966 Int.Computer Typesetting Conference, Institute of Printing. London

GREGORY, M. and POULTON, E.C. (1970) Even versus uneven right-hand margins and rate of comprehension in reading. Ergonomics 13(4)427-34

HARTLEY, J., BURNHILL, P. and FRASER, S. (1973) Typographical aspects of instructional design. Paper delivered at Ann.Conf. of Association for Programmed Learning and Ed.Tech. Obtainable from U. of Leeds, Dept. of Psychology

HARTLEY, J., FRASER, S. and BURNHILL, P. (Nov.1973) A selected bibliography of typographical research relevant to the production of instructional materials. U. of Leeds, Dept. of Psychology

HARTLEY, J. and MILLS, R.I. (1973) Unjustified experiments in typographical research and instructional design. Brit.J.Ed.Tech. 4(2)120-31

HUTT, A. (1967) Newspaper design. 2nd ed. Oxford U. Press

LUCKIESH, M. and MOSS, F.K. (1940) Criteria of readability. J.Exp. Psychology 27:256-70

KLARE, G.R., NICHOLS, W.H. and SHUFORD, E.H. (1957) The relationship of typographic arrangement to the learning of technical training material. J.Applied Psychology 41:41-45

MARKS, M.B. (1966) Improve reading through better format. J.Ed.Res. 60:147-51

NORTH, J. and JENKINS, L.B. (1951) Reading speed and comprehension as a function of typography. J.Applied Psychology 35:225-8

POULTON, E.C. (1959) Effects of printing types and formats on the comprehension of science journals. Medical Research Council Applied Psychology Unit report No.346 HMSO

POULTON, E.C. (1969) Skimming lists of food ingredients printed in different sizes. J.Applied Psychology 53:55-8

POULTON, E.C. (1969) Skimming lists of food ingredients printed in different brightness contrasts. J.Applied Psychology 53:498-500

POULTON, E.C. (1970) Ergonomics in journal design. Appl.Ergonomics 1:207-9

PYKE, R.L. (1926) Report on the legibility of print. Medical Research Council special report series No.110 HMSO

ROBINSON, D.O., ABBAMONTE, M. and EVANS, H. (1971) Why serifs are important: the perception of small print. Visible Lang. 5(2)353-9

SIMIN, O. (1963) Introduction of typography. Faber and Faber

SMITH, J. (1971) Research in brief: graphics of prose. Visible Lang. 5(4)365-9

SOCIETY of Industrial Artists and Designers. (1968) Working party on typographic teaching, interim report

SPENCER, H. (1968) The visible word. 2nd ed. Lund Humphries

SPENCER, H., REYNOLDS, L. and COE, B. (1973) A comparison of the effectiveness of selected typographic variations. Royal College of Art, Readability of Print Research Unit

SPENCER, H., REYNOLDS, L. and COE, B. (1973) A report on the relative legibility of alternative letter faces. Royal College of Art, Readability of Print Research Unit

TINKER, M.A. (1960) Legibility of mathematical tables. J.Applied Psychology 44:83-7

TINKER, M.A. (1963) Legibility of print. Iowa State U.Press

TSCHICHOLD, J. (1967) Asymetric typography. Faber and Faber

TURNBULL, A.T. and BAIRD, R.N. (1968) The graphics of communication: typography, layout and design. 2nd ed. New York, Holt, Rinehart and Winston

VERNON, M.D. (1946) On the legibility of print. International Printing 1:33-41

WENDT, D. (1972) On effects of indentation and underlining in reference work. Visible lang. 6(2)167-71

WIGGINS, R.H. (1967) Effects on three typographical variables on speed of reading. J.Typographic Res. 1:5-18

WILCOCK, B. Problems in the design of scientific and technical journals. Institute of Scientific and Technical Communicators (PTI: DG 30; see section B.8.2.1)

ZACHRISSON, B. (1965) Legibility of printed text.
Stockholm, Almquist and Wiksell

C.7 Scripts

DOBLOFER, E. (1973) Voices in stone, the decipherment of ancient scripts and writings. Paladin

FAIRBANK, A. (1965) A handwriting manual. Faber and Faber

FAIRBANK, A. (1968) A book of scripts. Rev.ed. Penguin

GRAY, N. (1970) Lettering as drawing: the moving line. Oxford. U.Press

'MASSIN' (1970) Letter and image. Studio Vista

C.8 Symbols

CHAO, Y.R. (1961) Graphic and phonetic aspects of linguistic and mathematical symbols. Proc.Symp. Applied Mathematics 12:69-82

DREYFUSS, H. (1972) Symbol sourcebook, an authoritative guide to international graphic symbols. New York, McGraw-Hill

EASTERBY, R. (1969) The grammar of symbols. Print 13:6

EASTERBY, R. (1970) The perception of symbols for machine displays Egonomics 13(1): 149-158

FREGE, G. (1972) Conceptual notation and related articles. Oxford U.Press

KLEE, P. (1953) Pedagogical sketchbook. Faber

LEES, J. and FARMAN, M. (1970) An investigation of the design and performance of traffic control devices. J.Typographic Res. 4(1)7-38

READ, K. (1972) Sound-writing: George Bernard Shaw and a modern alphabet 1892-1972, written for an exhibition in the library. U.of Reading, Typographic Unit

ROBINSON, L.J. (1972) Dictionary of graphical symbols. Avis

SHEPHERD, W. (1971) Glossary of graphic signs and symbols. Dent

WALKER, R.E., NICHOLAY, R.C. and STEARNS, C.R. (1965) Comparative accuracy of recognising American and international road signs. J.Applied Psychology 49:322-5

WHITTICK, A. (1971) Symbols: signs and their meaning and uses in design. Hill